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ABSTRACT

While Purdue University Calumet (PUC) (Hammond, Indiana) has been a receiver of distance education for a number of years, a number of faculty expressed interest in developing courseware that would allow PUC to be a provider. After a distance education mission statement and goals were outlined, a pilot course was established. The distance education pilot consisted of a 12-week required class to complete an associate degree in the ISCP program. The course includes basic operating system concepts and terminology as well as an experiential lab component. The course was taught entirely via the Internet and e-mail. All supplmental materials used for the course were created as PowerPoint presentations. A course evaluation was administered twice in the semester during midterm and final tests. Overall there was a positive student response to the class and a comparison of final grades between the distance education course and traditional course indicate that the distance education method is viable for instruction. A trial course in Management Information Systems (systems analysis) was also taught in the traditional method and at the same time via Internet distance education. The Distance Ed participants had higher marks than regular students; however, older students had been picked for the distance education method. A copy of the ISCP Distance Education home page included indicates positive development and a commitment from the faculty to more forward with distance education. (AEF)

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ED 410 939

Distance EducationVIA the Internet (Methodology and Results)

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Abstract:

Purdue Calumet now offers 8 courses over the internet. This session will present the planning and development of establishing these courses; Present Pros and Cons from both the faculty and student view point; Present some of the policies (and lack of) developed; List what we found that works and what does not work; and Discuss what is needed to be successful. Interaction and ideas from the audience will be solicited.

Distance learning via the internet provide the student with the "any time , any where" advantage, but does not add the "independent learning" disadvantage that usually came with the advantage.

A. Planning: or why did we jump?

A1. About Purdue Calumet...

Purdue University Calumet is a convenient, Hammond, Indiana campus location in the Purdue University system. It is a spacious 180-acre, 12-building regional commuter campus...just 25 miles southeast of downtown Chicago, less than three miles east of the Indiana/Illinois border. It is a comprehensive, full service university. Our 9,200+ students range in age from 16 to 60. Minority students comprise 24% of our enrollment. 55%+ of our students attend on a part-time basis.

A2. Data indicates that distance education via the internet is a needed learning option...

- Today, there are more than- 14 million college students.
- Only about 3 million students attend full-time in residency and are less than 22 years of age.
- 42 % of all undergraduates in the U.S. are 25 years of age and older
- College enrollment will only increase 5 % among students under 25, but a 16 % increase is projected among students over 25.
- 80 % of the workforce of the year 2000 is already in the workplace today.
- 75 % of the current workforce will need significant retraining in the next decade.
- 46% of households with computers are now on-line

Data from PBS Adult satellite service " Higher Education Trends"- The National center for Educational Statistics

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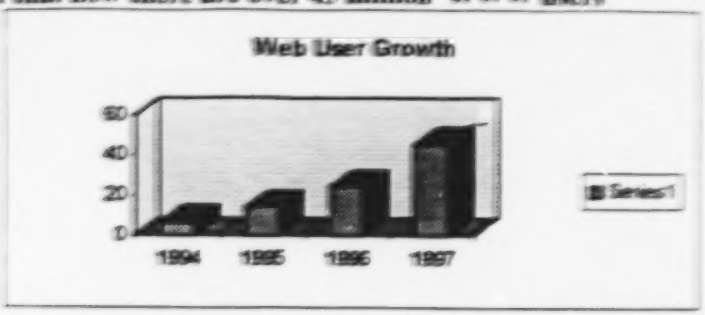
And the fact that now there are over 45 million WWW users



Market opportunities: According to the College Board, 46 million adults are being educated outside of academe, compared to the 7 million enrolled in colleges and universities in credit programs and about 1 0 million participating in noncredit offerings.

A3. Distance Education Committee created...

State wide activity and beginning development of courses on campus prompted the chancellor to form a committee to recommend a plan for distance education. Purdue University Calumet (PUC) has been a receiver of distance education for a number of years. The committee found that there were a number of faculty interested in developing courseware that would allow PUC to be a provider. The establishment of the Faculty Instructional Technical Services(FITS) lab several years ago provides a means for our faculty to become proficient in using technology in the classroom and has thus become a springboard for getting faculty ready for delivering distance education. The committee concluded that the University should take an active role in keeping on top of the various trends in distance education and encourage and support our faculty in creating multimedia presentations that will increase learning and position the University to be a provider of distance education.

Through the efforts of the committee PUC then had a distance education mission and goals which provided some direction for departments that wanted to explore distance education.

Committee's Distance Education Mission Statement:

Purdue Calumet will be knowledgeable of Distance Education activities in the State and nationally. We will run pilot projects on those methodologies that seem to have potential to help meet the University mission and expand on those projects that benefit the University, our students, and the community.

Committee's established Goals:

a) Increase student access to course content without regard to time or place
b) Establish facilities and services to support course development by faculty
c) Develop and test integrated distributed learning and multimedia technologies
d) Strengthen links between PUC faculty expertise and K-12 educational needs
e) Strengthen links between PUC faculty expertise and corporate educational needs
f) Encourage and support the development of "learner-centered" courseware
g) Establish a variety of technology-rich master classrooms and laboratories
h) Provide support for research on the effects of technology-based teaching strategies

i) Establish a comprehensive academic technologies software library
j) Provide teleconferencing facilities
k) Position PUC to provide training and other related support for K-12 teachers and students

A4. A pilot course was established...

Sue Conners from Purdue's ISCP department provided the following results from her project: (this is an excerpt from her report)

Pilot Overview

The CIS 286 distance education pilot consisted of a twelve week course during the 1996 summer session. Fourteen students were enrolled in the course with one student on the roster never participating in the class and one withdrawing due to equipment failure. The remaining students completed the course by communicating via Email with the instructor and using Telnet sessions to complete their lab assignments on university systems.

Class Composition

The students enrolled in the course represented both genders, various ages and ethnic backgrounds. There were eight women and four men completing the class. The eight women included two African-Americans and one Indian students. The other nine were Caucasian. Three students were post-baccalaureate certificate majors in ISCP, three were part of other SPS programs and six students were ISCP majors.

Course Content

The CIS 286 Operating Systems I class is a required class to complete an associate degree in the ISCP program. The course includes basic operating system concepts and terminology as well as an experiential lab component. Supplemental information to the text was supplied in PowerPoint presentations. Topics included: memory management, process management, I/O systems, and file handling. Laboratory assignments were required on the university AS400, AXP, and Sun UNIX systems.

Course Preparation

The course was taught entirely via the Internet and email. The instructor used personal equipment and Internet access from an independent provider. The home page created for the course was placed on the university web server and the university AS400, Alpha, and UNIX systems were used for the lab component of the course.

All supplemental materials used for the course were created as PowerPoint presentations. Corresponding reading and homework assignments were assigned in the text book and all information regarding those assignments placed on the home page.

The CTIS staff assisted in identifying what systems could be accessed through Telnet for the distance

education course and helped test electronic mail capabilities. CTIS also supported the web page development and implementation. Accounts for the students were created on the AS400, AXP, and UNIX systems.

New labs that could be completed through Telnet access were developed for the course. Students were asked to save their lab work on the respective systems rather than submit copies of printouts.

The tests were given on campus and were not modified from the traditional class form. The traditional midterm and final exam were required and the same tests used for the Spring on campus class were used for the summer distance education section.

A teaching assistant was hired to assist in answering phone questions, maintaining the home page, and posting grades on a spreadsheet. The original home page was modified and expanded several times through out the semester to accommodate student needs and problems.

Results of Student Course Evaluation

A course evaluation was administered twice in the semester when midterm and final tests were taken. There were nine questions, six required a rating and three allowed the students to express their own thoughts. A rating of 1 indicated strong disagreement. A rating of 5 indicated strong agreement. The results of the evaluations are displayed in the following tables. The number of students indicating that rating are indicated.

Course Evaluation done after the final exam:

QUESTION	1	2	3	4	5
1. I understand what is expected of me in this course	0	1	1	2	7
2. My instructor is readily available for consultation	0	1	0	3	7
3. My background is sufficient to enable me to use course material	0	1	2	4	4
4. Lab Assignments are reasonable in length and complexity	0	0	4	4	3
5. One real strength of this course is the virtual study groups	1	0	4	2	4
6. Directions for course assignments are clear and specific	0	1	2	3	5

7. What do you like best about this course?
   Staying at home. Not dealing with campus. Working on my own. Not coming here 4 nights a week. Lots of support. Flexibility. Convenience.

8. What do you like least about this course?
   Phone. Email. Lack of hearing lecture. Lack of interaction with students and professor. Labs. Material emphasis.

9. Recommendations for future students taking this course.
Form study groups. Study for tests.

The student ratings were slightly lower on the final course evaluation due to technical problems with the laboratory assignments in the second half of the course. These evaluations and comments may aid other distance education instructors in preparing their courses. Overall there was a positive response to the class.

Comparison of Student Outcomes to Traditional Class

The distance education students were required to come to campus to take the same written midterm and final that the traditional class completed in the Spring semester. The homework assignments were identical to the traditional class. The lab assignments were modified to accommodate the Telnet sessions but did not differ significantly in number or complexity from the traditional class. The comparison of final grades in the distance education course and the Spring traditional course indicate that the distance education course is a viable method of instruction.

GRADE	Spring 1996	Distance Education Pilot
A	4	4
B	9	4
C	4	3
D	0	1
F	1	1
Total Students	18	13

B. My experience in distance learning with a Management Information Systems (systems analysis) course...

Course Description:

An integrated approach to Management Information Systems with emphasis on business systems analysis, design, development, and implementation. Students will use the relational database management system Access on a microcomputer. Groups of three (3) students each will be assigned into "project teams". Each team will be assigned a case study problem which allows for the practical application of the concepts discussed during class.

This course was taught in the traditional classroom method and at the same time via internet distance education with four volunteers. The only requirement of the volunteers was they were not

to ever see me in person. It was interesting to note that I had half the class volunteer.

Team project required:

This class operated much like the pilot class, but did have the uniqueness of having a team project / case study where the team would then present their results. This was handled by the team Emailing their powerpoint presentation and presenting it via a telephone conference call. It was like we were all sitting in the same room with a video projector.

Results:

The Distance Ed people performed higher marks than the regular students. I did, however, pick the older students to do the distance ed.

Since the internet course was available to all the students, by the end of the course only 50% were attending my lectures (not sure what that means!!).

I discovered a lot needs to be developed to reduce the instructors time in class monitoring. This probably will come with better presentations.

C. The success of the pilot course encouraged the faculty to do more development.

The copy of the ISCP Distance Education home page illustrated on the next page indicates positive development and a commitment from the department to improve and move forward despite all the technical and policy needs. Some of these needs have been resolved. I am sure that there will always be new challenges as we continue to enhance our instructional delivery.

C1. Things I found worked well.

Two procedures that worked very well were FTP and TELNET.

FTP allowed students to see and transfer/download files (e.g. under the button " Get Lab 1 Data" was – (ftp://verbruwg@axp.calumet.purdue.edu/lab1.c))

TELNET allowed students to remotely login and do assignments, send and receive files (telnet://verbruwg@axp.calumet.purdue.edu).

Methods of creating the class on the WEB

I have also discovered many good development tools that make putting courses on the WEB easier. I have no idea which are better or best, but a few I have used in part are:

ShowBase	www.showbase.com	– update the WEB by updating a database
Asymetrix Web Publisher	www.asymetrix.com	– a template (fill in the blank approach)
HotMetal Pro	www.softquad.com	– good converter of text files to html with lots of design goodies

Purdue University Calumet

Information Systems & Computer Programming Department

ISCP Distance Learning

"Go the Distance with Distance Learning"

Distance Learning

Distance Learning study allows students to take classes at a distance say from the campus in Hammond, Indiana. Courses are delivered through a variety of media including printed media, internet, internship, videotape, audio tape, computer mediated instruction, interactive computer media, bulletin boards, data bases, facsimiles, telephone and various forms of directed study.

Table of Contents (hot links to courses)

CIS 204- Introduction to Computer Based Systems
CIS 205- Information Systems for Management
CIS 215- Structured Program Development
CIS 216- Object-Oriented Program Development
CIS 262 - Introduction to C Programming
CIS 286 - Computer Operating Systems
CIS 340 - Data Communications
CIS 351 - Decision Support and Expert Systems
CIS 490A - Advanced Computer Utilization

Return to:
ISCP Home Page
Purdue University Calumet Home Page

C2. Issues...

The assignment of faculty workload and faculty departmental credit for teaching students in both on-site and "virtual" classrooms (how will distance learning courses be counted?).

The organization and support of student support services in a distributed teaching environment. Distance education programs hold definite implications for student advising and tutoring; for the training and assignment of graduate student instructors at the sending and receiving sites; for library public services, such as bibliographic instruction.

Copyright laws affect what the Web developer can include on a site. How have you coped with including material in your on-line lessons that under classroom conditions could be photocopied?

What is your policy on access to your on-line teaching resources?

The issue of faculty incentives for developing new modes of teaching

C3. Needs...

Security for grade posting
Security for testing
You are alive probe - continuous contact and tracking of student progress
Methods to do automatic grading and recording of assignments
List serves, news groups, and chat training and enhancements of their capabilities
Need for consistency in developed courses -- presentations of information - how assignments are sent -- how grades are viewed -- head page format - overall structure

D. Summary...

The experience I gained in my trial course and what I have learned from the other faculty and students at PUC has convinced me that the methods of learning and delivery of education will change, and those that don't respond to these changes will be replaced by those that do. I feel that technology is mature and affordable enough that new methods of learning will become a part of our delivery of knowledge to our students and the community. In this past year PUC was experiencing more activity in distance education than it has in the last ten years. Questions about Who, When, Where with respect to distance education were coming from both faculty and staff as the current influx of distance education activity was invading our campus.

How do faculty get involved?; What is the procedure for offering a distance education course?; Where does one go to get information on policy?; Who is responsible for setting up the infrastructure and deciding what the infrastructure is? ; How is the faculty member compensated ?; Who owns the course - is this like a text book?; etc.? These questions and many more imply that Universities needs to have a place where the answer to these questions may be obtained. It is imperative that institutions establish an office (new or new duties in an existing office) where all related agenda of distance education may be found and coordinated.

Distance Education via the internet will not only change when and where people will learn , but will enhance the delivery of instruction in the traditional classroom.